JOURNAL OF THE FRANKLIN INSTITUTE.

Vol. CXXIII.

INDEX.

Abbe, Cleveland. Popular Errors in Meteorology, ... 115
Abney, Capt. Method for Determining the Density of Negatives, . . . 500
Active Oxygen, Delicate Reagent for Detecting, ... 417
Air Brush, Report of the Committee on Science and the Arts, on the, . . 157
Aluminium and its Alloys, etc. (Self), ... 209, 313, 388
Aluminium, Estimation of Small Quantities of, in Presence of a large Proportion of Iron, ... 496
American Astronomy, Recognition of, ... 490
Annual Review of Industrial Progress, ... 148
Application of Electricity to Weaving, ... 72
Apprenticeship and Professional Training, ... 502
Astronomical Journals in America, ... 173
Astronomical Levels, Disturbance of, by an Earthquake, ... 339
Atmospheric Air, Carbonic Acid Content of. (Blochmann), ... 240
Atmospheric Lines, The, ... 236
Atomic Weight of Gold. (Krus) 423

Bacteria, Transformation Effected in Potable Water by the Development of, ... 501
Base-ball-istics. (Michaelis), ... 230
Battery (Voltaic), with Carbon Elements, ... 498
Benzol, On the Constitution of. (Thomsen), ... 180
Bessemer Steel Process, Note on the Modifications of the. (Henderson), 454
Birkinbine, John. Rainfall and Water Supply, ... 277
Bleaching Alumina Compounds, ... 415

Book Notices:

Short Lectures to Electrical Artisans (Fleming); Theory and Practice of Surveying (Johnson); Mechanics of the Girder (Crehore); The Civil Engineer's Field Book (Butts); The Surveyor's Guide (Dorr), ... 60–66

Book Notices:

Techno-Chemical Receipt Book (Brannt and Wahl); Figure of the Earth (Roberts); Forestry in Norway (Brown); Topographical Drawings, etc. (Reed), ... 167–169

Report of the Board of Commissioners for the Second Geological Survey of Pennsylvania, 1887; The Story of the Rocks (Vail), 232, 234

Elements of Geodesy (Gore); Oblique Arches (Culley); Beams and Girders (Philbrick), ... 335, 336

Life and Work of Thomas Graham (Smith); The New South; Luftdruckbremse, System Carpenter, ... 411, 413

Russian and American Petroleum. (Redwood), ... 484

Booth, W. H. The Hammer-Blow in Locomotives, ... 47

Calcium Sulphide, Phosphorescent, Preparation of, ... 418

Carbonic Acid Content of the Atmospheric Air, ... 240

Casting Iron, etc., upon Lace, Embroideries, Fern Leaves and other Combustible Substances. (Outerbridge), ... 450

Castner Sodium Process, The. By James Mactear, ... 463

Catechu, Production of a Dye and Tanning Material from, ... 494

Celluloid Products, Report of Committee on Science and the Arts, on, 156

Church, Irving P. Turbines, ... 313, 379

Clarifying Oils by Permanganate of Potassium, ... 420

Coffee, Analysis of. (Pade), ... 500

Coloring Matter of Young Fustic. (Schmidt), ... 78

Coloring Matter of the Red and Yellow Dahlia. (Williams), ... 416

Combustion, Mode of Retarding, ... 420

Committee on Science and the Arts, Reports of—

On Products of the Celluloid Manufacturing Company, ... 156

On the Air Brush, ... 157

On Lowe Water Gas, ... 159

Correspondence—Is Electricity Force or Matter? (Hering), ... 488

Corona, Solar, Photography of. (Huggins), ... 174

Corrosion of Steam Generators, on a little-known Cause of. (Klein and Berg), ... 77

Crystals, General Method of the Formation of, by Diffusion. (Guignet), 496

Cutting Glass Tubes, A Sure Method of, ... 76

D'Auria, L. A New Method to Determine the Moon's Mass correctly, and on the Theory of the Tides, etc., ... 331, 409

D'Auria, L. On a Newly-Discovered Property of the Ellipse, ... 27

Dahlia, Coloring Matter of the Red and Yellow, ... 416

Dawn of Egyptian Civilization. (Sélikovitsch), ... 341

Dessication of Gases. (Van der Plaats), ... 499

Destruction of the Forests, Effects of the, ... 67

Destruction of Young Trout by Mosquitoes, ... 88

Division of a Set of Weights, the Most Rational. (Van der Plaats), . . . 75

Double Stars, New. (Hough), ... 491

Drawing School, Annual Report of the Director of the, for the Sessions 1886–87, ... 484

Dye and Tanning Material from Catechu, ... 494

Dyes and Coloring Materials of La Plata. (Baker), ... 179
Dyewoods, a New Method and Apparatus for extracting, for Immediate Use in Dyeing. (Wilkinson), ... 416

Efficiency (Comparative) of the Teeth of Gears. (Grant), ... 370
Egyptian Civilization, the Dawn of. (Sélikovitsch), ... 341
Electric Brevities, ... 67
Electric Conductibility of Gases and Vapors, ... 238
Electric Discharges, Action of, on the Pure Nitrogen, ... 422
Electric Transmission, the Julien System of. (Salom), ... 476
Electric Welding. (Thomson), ... 357
Electrical Insulation, ... 492
Electricity, Application of, to Weaving, ... 72
Electricity, is it Force or Matter? (Hering), ... 488
Electrolysis of Hydrogen-Fluoride and on the Properties of Fluorine (Moissan), ... 176
Elements, New (?), ... 422
Elevated Railroad, the Meigs. (Stark), ... 141
Elizabeth Thompson Fund, ... 48, 504
Ellipse, On a Newly-Discovered Property of the. (D'Auria), ... 27
Engler, C. Notes on Russian Petroleum, ... 76
Equivalent of Gadolinium Oxide, ... 422
Essential Oils, Concerning. (Gladstone), ... 73
Exhibition, Novelties, Report of the Judges of the, ... 79, 250
Expansion of Steam, Limitations of the. (Marks), ... 238
Explosive Mixture, a New. (Carazzi), ... 241

Fat in Milk, Determination of. (Kretzschmar), ... 241
Ferrel, Wm. Recent Advances in Meteorology, ... 169
Fisetin, ... 78
Fisetin, Glucoside Tannic Acid of, ... 78
Flow of Metals. (Smith), ... 232
Fluorine, Isolation of. (Moissan), ... 176
Forests, Effects of the Destruction of the, ... 67
Formaldehyde, on the Preparation of. (Tollins), ... 75
FRANKLIN INSTITUTE—Annual Election of Officers and Members of Committee on Science and the Arts, ... 166
" " Annual Report of the Board of Managers, ... 161
" " Annual Report of the Committee on Library, . . . 165
" " Drawing School, Closing Exercises of the, ... 484
" " Proceedings of the Stated Meetings—December, 1886, to May, 1887, ... 66, 161, 247, 340, 424, 487
" " Report of the Committee on Science and the Arts, on the Products of the Celluloid Manufacturing Company, ... 156
" " On the Air Brush, ... 157
" " On Lowe Water Gas, ... 159
" " Report of the Judges of the Novelties Exhibition, 79, 250
" " Secretary's Annual Review of Industrial Progress, 148
" " State Weather Service, Report of a Special Committee on a Plan for a, ... 38

FRANKLIN INSTITUTE—Supplement to the Catalogue of Duplicates for Sale or Exchange, ... 89
" " System of Screw-Threads, Correspondence Relating to, ... 261
Frazer, Persifor. A Card to Geologists, ... 423
Friswell, R. J. On Ransome's Improvements in the Manufacture of Portland Cement, ... 470
Fustic, Young, the Coloring Matter of. (Schmidt), ... 78
Fustin Tannide, or Glucoside Tannic Acid of Fisetin, ... 73, 78

Gadolinium Oxide, the Equivalent of, ... 422
Garrison, F. Lynwood. The Microscopic Structure of Iron and Steel, . 181
Gases, Dessication of. (Van der Plaats), ... 499
Geologists, Card to. (Frazer), ... 423
Germanium, a New Element, ... 74
Gieseler, E. A. The Illumination of Maritime Coasts, ... 1
Gladstone, J. H. On Essential Oils: Their Specific, Refractive and Dispersive Energy, ... 73
Glass Tubes, Sure Method of Cutting. (Beckmann), ... 76
Gold, Atomic Weight of. (Krus), ... 423
Grant, Geo. B. Comparative Efficiency of the Teeth of Gears, ... 370
Grant, Geo. B. A New Odontograph, ... 108
Graphic Expression of Relations Between the Gaseous and Liquid States, ... 180
Graphical Interpolator. (Torricelli), ... 503
Guignet, C. E. Formation of Crystals by Diffusion, ... 496

Hammer-Blow in Locomotives. (Booth), ... 47
Heat Photography. (Ives), ... 227
Henderson, C. Hanford. Note on the Modifications of the Bessemer Steel Process, ... 454
Hering, Carl. Is Electricity Force or Matter? 488
Hering, Rudolph. The Future Water Supply of Philadelphia, ... 30
Himes, Chas. F. The Stereoscope and its Applications, ... 398, 425
Hopeine, ... 499
Hops, Poisonous Properties of, ... 419
Hough, G. W. New Double Stars, ... 491
Houston, Edwin J. Can the Original Reis Telephone Transmit Intelligible Articulate Speech? 49
Huggins, Wm. Photographing the Solar Corona, ... 174
Hydrocyanic Acid, New Reaction for Detecting Small Quantities of. (Vortmann), ... 241
Hydrogen Compounds, Liquefaction and Solidification of, ... 180
Hydrogen Silicide, Formation of, as a Class Experiment. (Mermet), . . 499

Illumination of Maritime Coasts. By E. A. Gieseler, ... 1
Inosite, Preparation and Composition of. (Maquenne), ... 498
Insulation, Electrical, ... 492
Isochromatic Photography, ... 246
Ives, F. E. Heat Photography, ... 227

Julien System of Electric Transmission, The. (Salom), ... 476
Jupiter, Spots on, Periodic Variation of. (Lamey), ... 339

Koenig, G. A. On Schorlomite, ... 245

La Plata, Dyes and Coloring Materials of, ... 179
Lace, Embroideries, Fern Leaves, etc., Casting Iron and Other Metals Upon. (Outerbridge), ... 450
Leeds, Albert R. Purification of the Water Supplies of Cities, ... 93
Leone, T. Transformations Effected in Potable Water by the Development of Bacteria in, ... 501
Library, Supplement to the Catalogue of Duplicates for Sale or Exchange, 89
Lippman. A New Unit of Absolute Time, ... 491
Liquid and Gaseous States, Graphic Expression of the Relations Between, 180

Mactear, James. The Castner Sodium Process, ... 463
Mallet, J. W. Silver in the Volcanic Ash from the Eruption of Cotopaxi, 500
Magnesium, Melting Point of. (Meyer), ... 499
Magnetic Rotation of Aqueous Mixtures, etc. (Perkins), ... 175
Magnetism, Terrestrial, Solar Statistics and. (Wolf), ... 491
Marks, W. D. The Results of a Mathematical Investigation of the Limitations of the Expansion of Steam, ... 238
Mean Minor Planet, The. (Svedstrup), ... 172
Meigs Elevated Railroad. (Stark), ... 141
Melting Point of Magnesium. (Meyer), ... 499
Mercury, Distillation and Purification of, ... 494
Mermet, A. Formation of Hydrogen Silicide as a Class Experiment, . 499
Metals, Flow of. (Smith), ... 232
Meteorology, Popular Errors in. (Abbe), ... 115
Meteorology, Recent Advances in. (Ferrel), ... 169
Meyer, Victor. Melting Point of Magnesium, ... 499
Michaelis, O. E. A Word on Base-ball-istics, ... 230
Micro-Photography, ... 246
Microscopic Structure of Iron and Steel. (Garrison), ... 181
Milk, Determination of Fat in, ... 241
Milk Sugar, ... 421
Moissan, H. Isolation of Fluorine by Electrolysis of Hydrogen-Fluoride, ... 176
Mineralogical Notes, ... 245
Mineral Springs of the United States. (Peale), ... 71
"Moment of the Momentum," a Deduction from the Principle of, in the Case of Turbines. (Wood), ... 21
Moon's Mass, New Method for Determining correctly, etc. (D'Auria), 331, 409
Mountant for Albumen Prints, ... 500

Nebula, Number of Stars in our, ... 172
Negatives, Abney's Method of Determining the Density of, ... 500
Night-Signal Lantern, the Oatman, ... 503
Nitrogen Estimations, Apparatus for rapid, ... 418
Novelties Exhibition, Reports of the Judges of the, ... 70, 250
Number of Stars in our Nebula, ... 172

Oatman Night-Signal Lantern, ... 503
Observatory, Harvard College, ... 337
Observatory of Meudon, ... 489
Odontograph, A New. (Grant), ... 108
Oils, Clarifying, by Permanganate of Potassium, ... 420
Optical Illusion, An, ... 414
Outerbridge, A. E., Jr. A New Process of Casting Iron and other Metals upon Lace, Embroideries, Fern Leaves, and other Combustible Substances, ... 450
Oxygen, Active, Delicate Reagent for Detecting, ... 417

Parallax, Stellar, Determined by Photography. (Pritchard), ...
Petroleum, Notes on Russian. (Engler), ... 76
Petroleum, Russian, ... 252
Phosphorescent Calcium Sulphide, Preparation of. (Verneuil), ... 418
Phosphorus in Iron and Steel, Determination of. (Schneider), ... 495
Photographic Notes, ... 246, 340, 409
Planet, Photographic Search for a Minor. (Roberts), ... 491
Poisonous Properties of Hops, ... 419
Popular Errors in Meteorology. (Abbe), ... 115
Portland Cement, On Ransome's Improvements in the Manufacture of. By R. J. Friswell, ... 470

Rainfall and Water Supply. (Birkinbine), ... 277
Ransome's Improvements in the Manufacture of Portland Cement. By R. J. Friswell, ... 470
Reports of Committee on Science and the Arts—
On Products of the Celluloid Manufacturing Company, ... 156
On the Air Brush, ... 157
On Lowe Water Gas, ... 159
Reis Telephone, the Original, Can it Transmit Intelligible Articulate Speech? (Houston), ... 49
Retarding Combustion, ... 420
Roberts, Isaac. Photographic Search for a Minor Planet, ... 491

Salom, Pedro G. The Julien System of Electric Transmission, ... 476
Sardine Oil, ... 73
Schneider, Leopold. Determination of Phosphorus in Iron and Steel, 495
Schoop, P. Spectroscopical Test of Tar Colors, ... 497
Screw-Threads, Sellers, or FRANKLIN INSTITUTE System of, ... 261
Secretary's Annual Review of Industrial Progress, ... 148
Self, Edward D. Aluminium and its Alloys, etc., ... 209, 313, 388
Sélikovitsch, Geo. The Dawn of Egyptian Civilization, ... 341
Sellers, or FRANKLIN INSTITUTE, System of Screw-Threads, ... 261
Sewer-Gas, Preliminary Ideas on the Cremation of. By N. Wiley Thomas, 24
Silver in the Volcanic Ash from the Eruption of Cotopaxi. (Mallet), . . 500
Slag (Thomas), Treatment of, for Fertilizing Purposes, ... 242
Smith, Oberlin. Flow of Metals in the Drawing Process (Addendum), . 232
Sodium Process, Castner's. By James Mactear, ... 463

Solar Protuberances, Concerning the Dimensions and Positions of. (Riccò and Moscari), ... 172
Solar Spots and Faculæ, New Views Concerning. (Spörer), ... 235
Solar Statistics and Terrestrial Magnetism, ... 491
Specific Gravity of Easily Soluble Substances, New Method of Obtaining. (Zehnder), ... 75
Spectroscopical Test of Tar Colors. Schoop, ... 497
Spots of Jupiter, Periodical Variations of the, ... 339
Springs (Mineral), of the United States. (Peale), ... 71
Stark, George. The Meigs Elevated Railroad, ... 141
Stars, New Double. (Hough), ... 491
State Weather Service, Draft of an Act for Creating, ... 247
State Weather Service, Report of the Committee to Formulate Plan for a, 38
Steam, Investigation of the Expansion of. (Marks), ... 238
Stellar Magnitudes, the Light Ratio of. (Chandler), ... 236
Stereoscope and its Application, the. (Himes), ... 398, 425
Sugars; Milk Sugar, ... 421

Tar Colors, Spectroscopical Test of. (Schoop), ... 497
Tartrazin, ... 422
Tannins, Estimating. (Proctor), ... 415
Tannin; its Present and Future Sources. (Trimble), ... 442
Tanning Material from Catechu, ... 494
Telephone, Reis's Original; Can it Transmit Intelligible Articulate Speech? (Houston), ... 49
Teeth of Gears, Comparative Efficiency of the. (Grant), ... 370
Terrestrial Magnetism, Relation between certain Solar Phenomena, etc. (Marchand), ... 337
Thermodynamics. (Wood), ... 128, 196, 298
Thomas, N. Wiley. Preliminary Ideas on the Cremation of Sewer Gas, 24
Thermometer, a Lecture, ... 180
Thomson, Elihu. Electric Welding, ... 357
Thomson, R. T. Estimation of Aluminium in Presence of a Large Proportion of Iron, ... 496
Tides, Theory of, etc. (D'Auria), ... 331, 409
Time, Absolute, a New Unit of. (Lippman), ... 491
Torricelli, G. A Graphical Interpolator, ... 503
Trimble, Henry. Tannin: its Present and Future Sources, ... 442
Trout, Destruction of Young, by Mosquitoes, ... 88
Turbines. (Church), ... 313, 379

Unit for Absolute Time, a New. (Lippman), ... 491

"v" new value of. (Himstedt), ... 236
Vapor Pressure of Bromide and Iodine, and on Iodine-Monochloride. (Ramsay and Young), ... 72
Voltaic Cell with Carbon Elements and without Metal. (Tommasi and Radiguet), ... 498
Vortmann, G. New Reaction for Detecting Small Quantities of Hydrocyanic Acid, ... 241

Water Gas, Heating and Smelting Experiments with. (Rösler and Ehrlich), ... 244
Water Gas, Lowe's, Report of the Committee on Science and the Arts on, 159
Water (Potable), Transformations Effected in, by the Development of Bacteria. (Leone), ... 501
Water Supply of Philadelphia, Future. (Hering), ... 30
Water Supplies of Cities, Purification of the. (Leeds), ... 93
Weather Service for Pennsylvania, Draft of Bill for, ... 247
Weather Service, Report of a Special Committee to Formulate a Plan for a, for the State of Pennsylvania, ... 38
Weaving, Application of Electricity to, ... 72
Weights, the Most Rational Division of a Set of. (Van der Plaats), . . 75
Welding, Electric (Thomson), ... 357
Wing of a Bird, Motion Given to the Air by the, ... 237
Winkler, C. Separation and Properties of Germanium, ... 74
Wolf, R. Solar Statistics and Terrestrial Magnetism, ... 491
Wood, De Volson. A Deduction from the Principle, "The Moment of the Momentum" in the Case of Turbines, ... 21, 128, 196
Wood, De Volson. Thermodynamics, ... 128, 196, 298